

Claims

1. A method for estimation of combustion chamber pressure of an internal combustion engine,

characterized by

modeling of the internal combustion engine with a plurality of model parameters in a model (1, 2) by providing a combustion chamber pressure value and a model alternating torque (MW),

acquiring an actual alternating torque (IW) value,

adjusting (4, 5) the model alternating torque (MW) to the actual alternating torque (IW) by modifying the model parameters,

and determining an estimated value of the combustion chamber pressure in relation to the model (1, 2) on the basis of the modified model parameters.

2. The method as claimed in claim 1, wherein the model (1,2) comprises a cycle model (1) for description of combustion in a combustion chamber, the initial values in particular being taken from an engine control unit.
3. The method as claimed in claim 1 or 2, wherein the model (1,2) comprises a mechanical model (2) for description of a spring-mass system of the internal combustion engine.
4. The method as claimed in one of claims 1 to 3, wherein band limitation (3) is effected in order to acquire the model alternating torque (MW).

5. The method as claimed in one of claims 1 to 4, wherein the adjustment (4, 5) is effected by error calculation (4) and reduction of the error (5) below an assigned limit value in a control circuit by means of the model parameters.
6. The method as claimed in claims 1 to 5, wherein the actual alternating torque (IW) is an estimated value of a moment estimation model.
7. A device for estimating combustion chamber pressure of an internal combustion engine,
characterized by

a computer system for modeling of the internal combustion engine having a plurality of model parameters in a model (1, 2) by providing a combustion chamber pressure value and a model alternating torque (MW),

an acquisition system connected to the computer system for acquiring an actual alternating torque (IW), the model torque (MW) being subjected to adjustment to the actual alternating torque (IW) by the computer unit through modification of the model parameters and it being possible to determine an estimated value of the combustion chamber pressure in relation to the model (1, 2) on the basis of the modified model parameters.

8. The device as claimed in claim 7, wherein the model (1, 2) stored in the computer system comprises a cycle model (1) for description of combustion in a combustion chamber, it being possible to acquire initial values in particular from an engine control unit.
9. The device as claimed in claim 7 or 8, wherein the model (1, 2) filed in the computer system comprises a mechanical model (2) for description of a spring-mass system of the internal combustion engine.

10. The device as claimed in one of claims 7 to 9, such device comprising a filter mechanism for band limitation (3) for the purpose of acquisition of the model alternating torque (MW) from a moment pattern.
11. The device as claimed in one of claims 7 to 10, wherein adjustment of the model alternating torque (MW) by the actual alternating torque (IW) in the computer system may be effected by error calculation and reduction of an error below an assigned limit value in a control circuit by means of the model parameters.
12. The device as claimed in one of claims 7 to 11, wherein the acquisition mechanism for acquisition of the actual alternating torque (IW) has an additional computer system for estimating the actual alternating torque (IW) from a measured value in relation to an angular velocity of the internal combustion engine.